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New subgenera and species of Agraeciini (Orthoptera, Tettigoniidae, Conocephalinae) from South Asia found in historical insect collections

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http://zoobank.org/8BD62DBF-438C-4650-8C40-37C837FD573F

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Abstract

Based on specimens collected in historical times and stored in the insect collections of the Natural History Museum London and the Zoological Museum Hamburg two new subgenera are established *Robustacca* **subgen. nov.** of the genus *Peracca* Griffini, 1897 and *Indoliara* **subgen. nov.** of the genus *Liara* Redtenbacher, 1891. Five new species are described: *Peracca* (*Robustacca*) *nigrifrons* **sp. nov.** from Sumatra, *Liara* (*Acanthocoryphus*) *durata* **sp. nov.** from Hongkong, *Liara* (*Indoliara*) *dividata* **sp. nov.** from South India, *Pseudosubria assamensis* **sp. nov.** from Assam and *Depressacca kinabalu* **sp. nov.** from Sabah. The species *Odontoconus robustus* Karny, 1923 is newly combined as *Peracca* (*Robustacca*) *robustus* (Karny, 1923) **comb. nov.** An extended and updated key to the subgenera of the genus *Peracca* Griffini, 1897 is provided. All specimens are deposited in the original collections.

Key Words

Biodiversity, BMNH, ZMH, Hongkong, India, Malaysia, Sabah, Singapore, Sumatra

Introduction

As our knowledge of the insect diversity in number of species increases and the knowledge of their morphology, diversity, distribution and ecology becomes more detailed than in historical times, we may come to different solutions for the arrangement of the lower taxa as species or subspecies into subgenera, genera and higher taxonomic units. A recent example in the tribe Agraeciini is the re-grouping of taxa related to *Peracca* Griffini, 1897, *Liara* Redtenbacher, 1891 or *Anelytra* Redtenbacher, 1891 into genera and subgenera by Gorochov (2011, 2015, 2020).

The discovery of new species in formerly unworked, historical insect collections kept in museums inspired me to refine the subdivision of *Peracca* into subgenera proposed by Gorochov (2011) and to re-evaluate the systematic position of the species with the original combination *Odontoconus robustus* Karny, 1923. Other taxa covered by the present publication are a new subgenus of *Liara* Redtenbacher, 1891 from South India with remarkably modified cerci and simplified titillators, and the description of in total five new species in four genera.

Material and methods

The current study is based on formerly unidentified specimens that were found in the insect collections of the Natural History Museum London (BMNH) and the Zoological Museum Hamburg (ZMH). Their data had not been published elsewhere. Data of one specimen kept in the Bishop Museum Honolulu (BMH) and published already in Ingrisch (1998) was used for comparison.

Photographs were done some years ago with a Nikon E4500 (habitus) or the same camera mounted to a Motic M5 stereo microscope. Some of the habitus photos were taken with classical photography. Line drawings were done using a camera lucida mounted to a Wild stereo microscope.

The ID numbers assigned to the specimens listed in this publication refer to the specimen IDs used in my database.

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These numbers are also printed at the identification labels attached to the specimens. In addition, for specimens in BMNH the serial acquisition number is given. This number is however not unique for a single specimen but refers to the collection event and donator. It consists of the year of acquisition and a serial number. For the specimen in ZMH the collection ID of the specimen is provided.

Geographical coordinates were not available from information attached to the specimens. For most of the specimens studied I found rough estimates for the coordinates of their localities from a search in Google Maps (2020).

The specimens on which the current study is based are housed in the following museums:

BMH Bishop Museum Honolulu, USA
BMNH Natural History Museum London, UK
ZMH Zoological Museum Hamburg, part of the Centrum für Naturkunde, University of Hamburg, Germany

Systematics

Peracca Griffini, 1897

Peracca Griffini, 1897: 1; type species: *Peracca conspicuithorax* Griffini, 1897 from Malaysia, Perak, Malacca

Note. Species of the genus *Peracca* Griffini, 1897 occur in Malay Peninsula, Singapore, Borneo, Sumatra, Java, and some smaller islands of that area. Seven species of *Peracca* have been known during my revision of the SE Asian Agraeciini (Ingrisch 1998), plus three species of the genus *Odontoconus* Fritze, 1908. The species of this group received some interest more recently (Gorochov 2011, 2015, Tan and Ingrisch 2014), which led to downgrading the rank of *Odontoconus* to a subgenus of *Peracca*, the description of another new subgenus and the description of nine new species in *Peracca*, thus that currently *Peracca* is split into three subgenera with a total of 18 valid species (Cigliano et al. 2020).

After *Odontoconus* had been downgraded to a subgenus of *Peracca* by Gorochov (2011), a re-evaluation of the species left in that subgenus became useful. The type species *P.* (*O.*) *spinipes* (Fritze, 1908) is a fully winged species described from a single female from Borneo. It is a slender species with very low pronotum lateral lobes. The other three species currently kept in the subgenus were described from Java and Sumatra. Of them, only *P.* (*O.*) *lampungi* Gorochov, 2011 has a similarly shaped body, but shorter wings as the type of *Odontoconus*, and it is a male. *Peracca* (*O.*) *setosus* (Ingrisch, 1998), a female, agrees in general appearance with *Odontoconus*, but is much stouter. The relations of these three species may be re-evaluated after both sexes of them become known. Only for *P.* (*O.*) *robustus* (Karny, 1923), described from a single female, both sexes became known after the discovery of males in the BMNH and the BMH. This allows a new evaluation of its status and makes it necessary to establish a new subgenus for this and another new species found in the ZMH.

Key to subgenera of the genus *Peracca* Griffini, 1897

(extended and modified from Gorochov 2011)

1 Face oval. Pronotum in both sexes with lateral lobes rather deep, less than twice as long as high. Male subgenital plate with central area prolonged behind, with narrow apical third, at end upcurved and divided in midline, terminating into a pair of acute apical cones, without moveable styli (Fig. 1B)..... subgenus *Robustacca* subgen. nov.
– Face conical, mostly narrow conical. Pronotum in both sexes with lateral lobes low, narrow, more than twice as long as high. Male subgenital plate not prolonged, with apical margin broadly truncate or slightly concave, provided with moveable styli 2
2 Male pronotum with elongate hind lobe covering only base of tegminal stridulatory apparatus; prosternum with very long spines; anterior part of mesosternum without distinct spines or spine-like projections. Male cerci with almost rounded, not hooked, large proximal lobe directed more or less laterally..... subgenus *Sumatracca* Gorochov, 2011
– Male pronotum of different shape, either longer or shorter; prosternum spines vary between species; anterior part of mesosternum with distinct spines or spine-like projections. Male cerci with a large proximal lobe or two such lobes, and this lobe or one of these lobes more or less hooked and directed medially..... 3
3 Fastigium verticis with a short dorsal tubercle or without any. Male pronotum prolonged behind, covering a great part or all of the stridulatory area; prosternum with moderately long or short spines ..... subgenus *Peracca* Griffini, 1897
– Fastigium verticis with a rather long dorsal tubercle. Male pronotum less prolonged behind, leaving the stridulatory area largely free, in female with truncate hind margin; prosternum with long spines .... subgenus *Odontoconus* Fritze in Carl, 1908

Robustacca subgen. nov.

http://zoobank.org/0718E451-8592-4220-96A9-A10F18E5C409

Type species. *Odontoconus robustus* Karny, 1923.

Etymology. The name of the new subgenus is built from a combination of the root of the name of the type species with the ending of the genus name.

Diagnosis. The stout general habitus of the new subgenus and the rather high lateral lobes of pronotum resemble the situation in the genus *Liara*, but the spine behind the ventro-anterior angle of pronotum, the strongly modified male cerci and the absence of sclerotized titillators agree with the genus *Peracca*. The new subgenus contains stout, robust species with large head. – Head and pronotum rugose. Fastigium verticis with a dorsal process. Pronotum with lateral lobes rather deep compared to other subgenera of *Peracca*, less than twice as long as high; at ventral margin with a small spine behind anterior angle. Fully winged, wings surpassing abdomen but not reaching tip of ovipositor in female. Tegmen markedly narrowed in apical third. Prosternal spines long with acute tip. The male cerci have the internal branch prolonged and curved backward at end, the apical process is laterally compressed and pointing straight behind instead of being downcurved as in the subgenus *Odontoconus*, it is provided with spinules along dorsal margin but is missing a narrow ventral branch that occurs in most species of the subgenus *Odontoconus*. A so far unique character is the markedly narrowed prolongation of the male subgenital plate that is divided and upcurved at end and has the styli reduced to small and short, acute conical spines while in all other subgenera of *Peracca* s.l. the males have subgenital plates with truncate or slightly concave apical margin and with distinct, normal styli.

Species included. *Peracca* (*Robustacca*) *robustus* (Karny, 1923) comb. nov. and *Peracca* (*Robustacca*) *nigrifrons* sp. nov.

Peracca (*Robustacca*) *robustus* (Karny, 1923) comb. nov.

Figs 1, 2

Odontoconus robustus Karny (1923), Ingrisch (1998); *Peracca* (*Odontoconus*) *robusta* Gorochov (2011).

Etymology. The Latin word *robustus* does not accept different gender forms.

Specimens studied. 1 female (holotype): Singapore: Bukit Timah (1°20'N, 103°47'E), 23.viii.1911 – depository: BMNH (B.M.1937–197); 1 male, Malaysia, Selangor, Ampang (3°10'N, 101°46'E), 1.iii.1948, coll. H.T. Pagden – depository: BMNH (B.M.1955–354); 1 male, Malaysia, Rompin Mining Co. (Rompin 2°48'N, 103°27'E), Railway Track, 50 km, 31.iii.1961, coll. K.J. Kuncheria – depository: BMH Honolulu.

Remark. The species was originally described from a single female from Singapore by Karny (1923). Its treatise in Ingrisch (1998) was based on Karny's description and a single male from SE Pahang in Malaysia. Meanwhile I could study the female holotype and another male from South Malaysia, which are used for a re-description.

Description. Head with fastigium verticis markedly projecting anteriorly, on top in basal area with a roughly cylindrical process that has the apical area narrowed and rounded (Fig. 2F, I). Pronotum with rounded fore and truncate hind margin; apical area in male little elevated backwards in male, flat in female. The two central spines at the ventral inner (anterior) margin of the fore femur are markedly enlarged. Prosternum with 2 long spines. Tegmen wide in subbasal area then markedly narrowed to about apical third; tip rounded (Fig. 1E). Femora with the following number of spines on ventral margins: profemur 6 external, 5–6 internal; mesofemur 6 external, 3 internal; postfemur 12 external, 13–14 internal. Knee lobes of pro- and mesofemur obtuse on external, spinose on internal side; of postfemur uni-spinose on both sides.

Male. Stridulatory file on underside of left tegmen with about 175 teeth; teeth in basal quarter narrow but distinctly spaced, teeth getting wider and more densely packed to about midlength, then becoming very dense and in about apical eighth strongly narrowed (Fig. 1F). Tenth abdominal tergite strongly setose, apical margin in middle rounded, on both sides substraight but oblique. Cerci with globular base from which two processes arise: the dorsal process is stout but rather short conical with the same sculpturing as at base, pointing mediad and ending into a compressed and subsmooth, triangular, dorso-ventrally compressed, horizontal plate that has the distal angle rounded, the proximal angle acute; the ventral process is elongate, laterally compressed, pointing straight behind, and has a subsmooth surface that carries along dorsal margin numerous spines, at tip it is slightly downcurved and covered with a bunch of spinules (Fig. 1B–D). Subgenital plate wide in about basal half with rounded lateral margins that are narrowed into a straight, narrow process that is split along midline and upcurved before tip where it terminates into a pair of small acute teeth; without styli (Fig. 1A, B).

Female. The seventh sternite had been cut for filling the specimen. Subgenital plate with converging and upcurved lateral margins; apical margin in ventral view broadly subtruncate with upcurved margin that is slightly excised in middle (Fig. 2F). Ovipositor moderately upcurved with area behind mid-length little higher than in subbasal area, then narrowing toward tip; tip of dorsal valves narrow-obtuse, of ventral valves acute (Fig. 2H).

Measurements (1 male, 1 female). Body w/wings: male 42, female 48; body w/o wings: male 33, female 37; pronotum: male 10.2, female 10.5; tegmen: male 28, female 32; hind femur: male 18, female 21; ovipositor: female 21.5 mm.

Peracca (*Robustacca*) *nigrifrons* sp. nov.

http://zoobank.org/E51CCE50-14CE-4B62-B853-678950A642CE

Figs 2, 3

Holotype (female). Indonesia: Sumatra, Riau, Indragiri, Somgei Lalah [Sungai Lala, about 0°24'S, 102°12'E] 1.i.1900–26.viii.1901, leg. W. Burchard – depository: ZMH (HTodosumF01; collection ID: ZMH64336).

Etymology. The name of the new species refers to its black face; from Latin *niger*, *nigro* black and *frons* face.

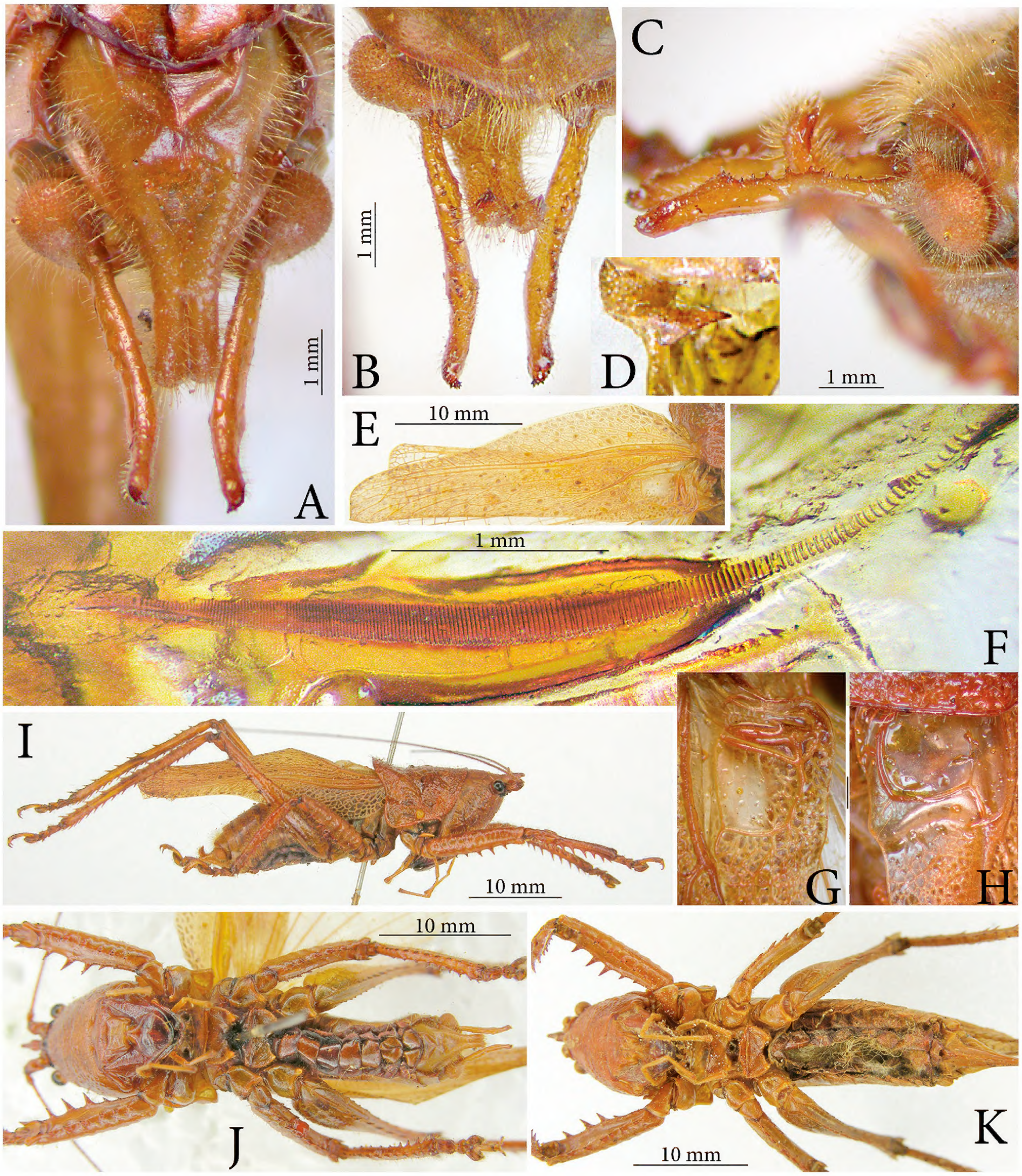

Figure 1. *Peracca* (*Robustacca*) *robustus* (Karny, 1923) comb. nov. male from Ampang (**A–C, E–J**), male from SE Pahang (**D**), and female holotype (**K**): **A–C** male subgenital plate and cerci in ventral (**A**), dorsal (**B**) and lateral view (**C**); **D** basal area of male left cercus in medio-dorsal view; **E** left tegmen, **F** stridulatory file on underside of left tegmen; **G, H** stridulatory area of left (**G**) and right tegmen (**H**) in dorsal view; **I** habitus lateral view; **J, K** ventral view of body and femora of male (**J**) and female (**K**).

Diagnosis. The new species differs from the type species, *P.* (*R.*) *robustus* by the black color of the face instead of agreeing with general coloration (Fig. 2A), by the longer and conical process on top of fastigium verticis (Fig. 2C) instead of a shorter, subcylindrical process in *P.* (*R.*) *robustus* (Fig. 2C, I), and by the female subgenital plate that has a bilobate end (Fig. 3E) instead of a subtruncate apical margin (Fig. 2F).

Description. Fastigium verticis subcylindrical, slightly surpassing scapus, apical area conical, apex obtuse; dorsal surface with a large cone at base; lateral ocelli projecting; in frontal view roundly swollen at base (Fig. 2B, C). Pro-

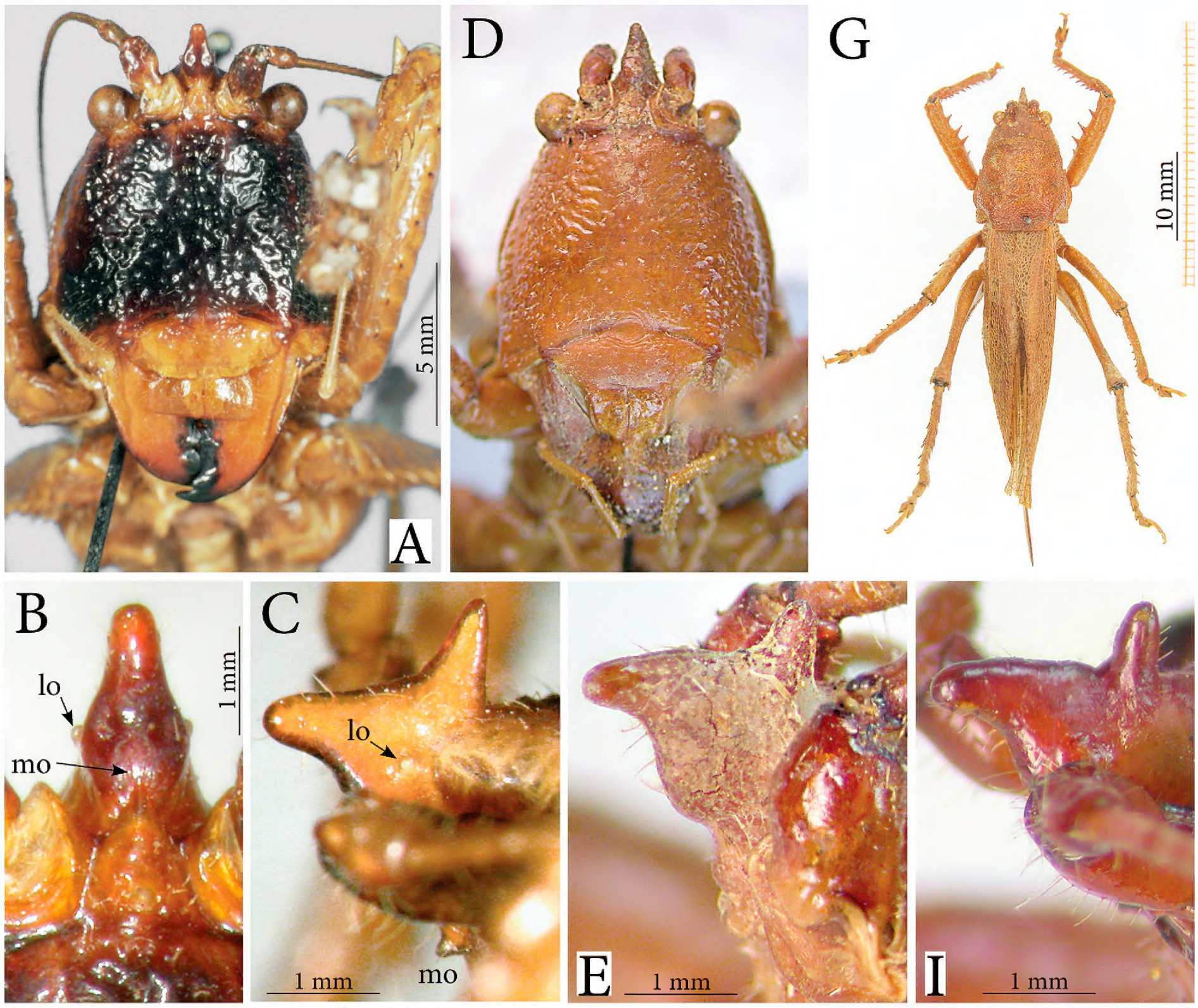

Figure 2. *Peracca* (*Robustacca*) subgen. nov.: **A–C** *P.* (*R.*) *nigrifrons* sp. nov. female holotype: **A** face; **B** fastigium verticis in ventro-anterior view and **C** in lateral view. – **D–I** *P.* (*R.*) *robustus* (Karny, 1923) comb. nov. female holotype (**D–H**) and male from SE Pahang (**I**) **D** Face; **E** fastigium verticis in lateral view; **F** female subgenital plate; **G** habitus dorsal view; **H** habitus lateral view; **I** fastigium verticis. Abbreviations: lo lateral ocellus, mo medium ocellus.

notum rather short and broad; transverse sulcus not interrupted in middle; a second, Y-shaped sulcus on paranota, and some longitudinal furrows in middle of disc; ventral margin descending backwards, in anterior area with a small spine (Fig. 3H). Tegmen surpassing hind knees but not reaching tip of ovipositor (Fig. 3B). Prosternal spines long, subacute; mesosternal lobes cylindrical; metasternal lobes short cylindrical (Fig. 3D, I). Mesofemur and mesotibia slightly compressed. All femora with spines on both ventral margins; on fore and mid femora spines on anterior margin longer than on posterior margin. Knee lobes of profemur obtuse on external side, of mesofemur triangular on external side; hind knee lobes uni-spinose on both sides.

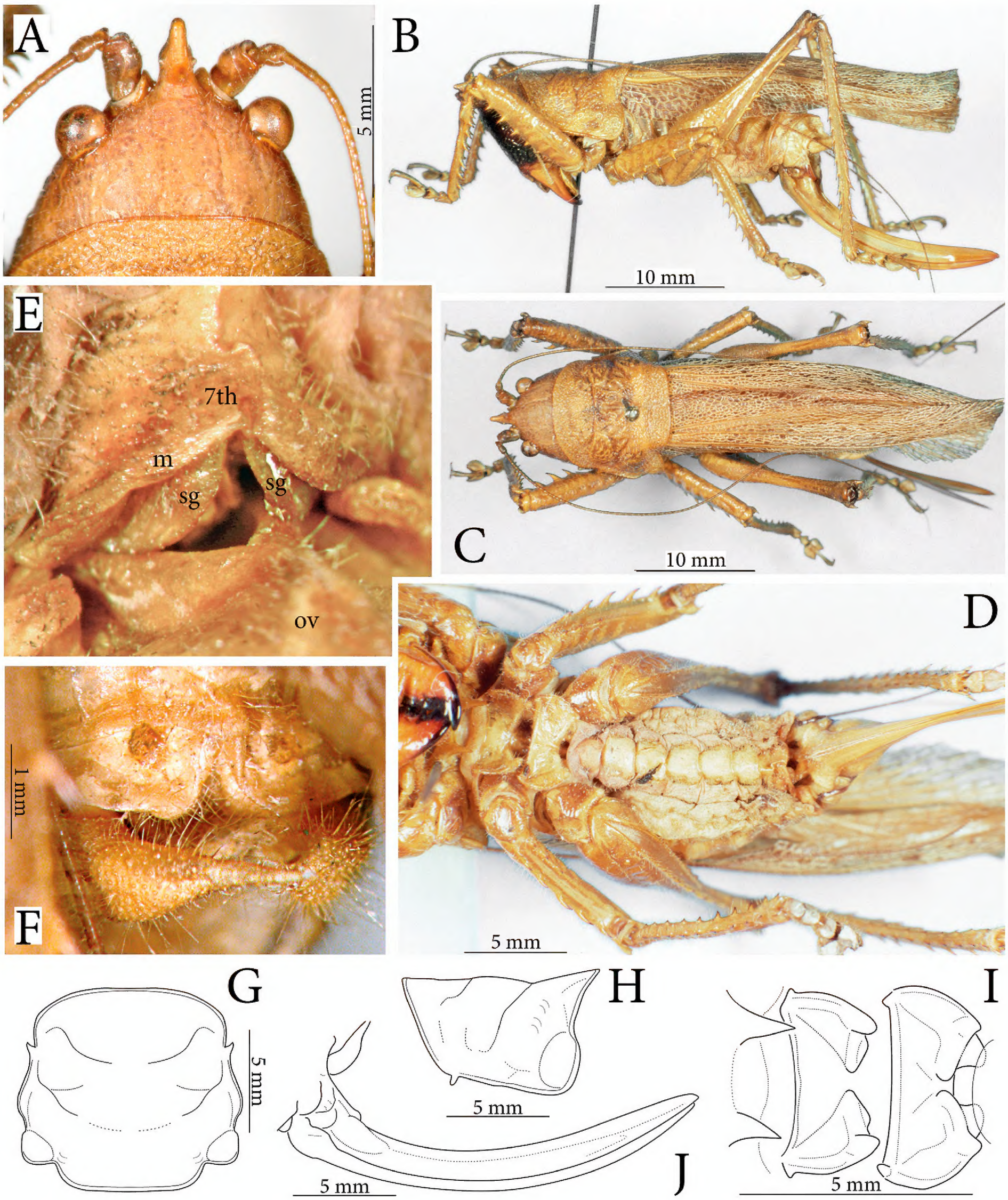

Figure 3. *Peracca* (*Robustacca*) *nigrifrons* subgen. & sp. nov. female holotype. **A** Head in dorsal view; **B–D** habitus in lateral (**B**), dorsal (**C**) and ventral view (**D**); **E** female abdominal apex in ventral view, the subgenital plate has the anterior area hidden under the 7th sternite in the shrunken specimen; **F** apical tergites and cerci; **G, H** pronotum in dorsal (**G**) and lateral view (**H**); **I** thoracic sternites; **J** ovipositor. Abbreviations: 7th seventh abdominal sternite, m membranes, ov base of ovipositor, sg apical lobes of subgenital plate.

Male. Unknown.

Female. Tenth abdominal tergite transverse; angularly excised from apex for almost half of its length (Fig. 3F). Epiproct triangular. Cerci conical, little curved in dried specimen, with a long, narrow apical area (Fig. 3F). Subgenital plate largely hidden under preceding sternite in preparation, terminating into a pair of rounded apical lobes (Fig. 3E). Ovipositor with both margins curved,

apex sub-obtuse (Fig. 3B, J). Tegmen in middle of anal field with an area of veinlets carrying small pegs ending up in a hair.

Coloration. Light brown [discolored due to previous conservation in alcohol]. Frons black; mouthparts yellowish to reddish brown; apex of mandibles black. Tegmen with medium brown cells and yellow brown veins and veinlets (pattern little distinct); areas around subcosta and radius and before anal vein of uniform light color; in dorsal area some scattered cells darker than most others.

Measurements of female. Body w/o wings: 33; pronotum: 9.8; tegmen: 30; hind femur: 19; ovipositor: 19.5 mm.

Peracca (*Sumatracca*) *kerinci* Gorochov, 2011

Specimens studied. 1 male, Indonesia: Sumatra, Sungei Kumbang, Korinchi (1°48'S, 101°16'E), 1370 m, 1.–30. iv.1914 – depository: BMNH (Lo042S001). Second record for this species.

Liara Redtenbacher, 1891

Liara Redtenbacher, 1891: 444; type species *Liara rufescens* Redtenbacher, 1891: 444.

Note. The genus contained so far three subgenera: *Liara*, *Acanthocoryphus* Karny, 1907, and *Unalianus* Koçak & Kemal, 2009 (replacement name for *Oxystethus* Redtenbacher, 1891 because of homonymy) (Cigliano et al. 2020). In this publication a fourth subgenus and two new species are described.

Liara (*Acanthocoryphus*) *durata* sp. nov.

http://zoobank.org/AA3F0556-CAB5-477C-A42B-0AFFC9E84561

Fig. 4

Holotype (male). Hongkong [without precision], in or before 1911, coll. F.W. Terry – depository: BMNH (Lo031S001; B.M.1911–359). The type is unique.

Etymology. The new species is named for the sclerotised central convexity of the male titillators, modified from Latin *durare* to harden, hardened.

Diagnosis. The titillators of the new species are intermediate between those of the subgenera *Liara* s.str. and *Unalianus* Koçak & Kemal, 2009 in that they are fused as in *Unalianus* but of general shape as in *Liara*; the membranous lateral expansions are sclerotised but the apical areas not as strongly prolonged as in *Unalianus*. Judging from the shapes of the cerci and titillators, the new species comes close to *Liara* (*Acanthocoryphus*) *brevis* Ingrisch, 1998. It differs by the long and upcurved fastigium verticis which is almost twice as long as the scapus instead of only little longer and has a strong tubercle at base. Further differences are the fused titillators, the very small styli, and shorter wings. The cerci are similar in both species but in the new species less wide at base and the apical branches more curved.

Description. A short and stout, strongly brachypterous species (Fig. 4A). Fastigium verticis much longer than scapus, strongly upcurved; with a large tubercle at top near base, immediately followed by a smaller tubercle anteriorly; apex acute; separated from fastigium frontis by a narrow seam (Fig. 4C, D). Frons rugose (Fig. 4B). Pronotum rugose, short funnel-shaped, only in apical area little shouldered; anterior margin in middle truncate; posterior margin truncate; transverse sulci only indicated; paranota with anterior angle rounded, posterior angle broadly rounded; auditory swelling very weak; humeral sinus weak. Tegmen surpassing apex of third abdominal tergite, hind wings of almost same length (Fig. 4A). Prosternum mute; mesosternal lobes long and stout; metasternal lobes obtuse; intermedial plate with small spines at posterior angles (Fig. 4F). Femora with the following number of spines on ventral margins: profemur no external, 2–3 internal; mesofemur 4 external, no internal; postfemur 6–7 external, no internal. Knee lobes of profemur obtuse on external, short spinose on internal side; of mesofemur acute on external, spinose on internal side; of postfemur spinose on both sides.

Male. Tenth abdominal tergite little prolonged; apical margin converging on both sides, broadly truncate in middle. Epiproct triangularly rounded with shallow medial furrow. Paraprocts with short obtuse compressed projections. Cerci short, at apex divided into a broad falcate dorsal and a narrow falcate ventral projection, both curved up; on internal side with a weak furrow from dividing point of apical projections to base (Fig. 4J, K). Subgenital plate with straight converging lateral margins; apex broad, deep triangularly excised; styli very small. Titillators fused in middle; basal areas furrowed, pointing laterad; fused area at apex faintly bilobate; lateral expansions of central parts ("lateral sacculi" in Ingrisch 1998) sclerotised, bulging, then curved and diminishing, largely surpassing tip of fused parts, terminating in an acute tip (Fig. 4G–I).

Coloration. Uniformely yellowish brown. Frons reddish brown; mandibles black; tip of fastigium verticis especially on ventral side black. Pronotum with indication of brown lateral bands near hind margin only. Tegmen with dark spots. Meso- and metasternal lobes dark brown with tips of lobes yellowish brown.

Measurements of male. Body w/o wings: 19; pronotum: 7.6 ; tegmen: 8.2, hind femur: 14 mm.

Indoliara subgen. nov.

http://zoobank.org/B327C5E3-E65F-4784-B952-D04ABBE89FA1

Type species. *Liara* (*Indoliara*) *dividata* Ingrisch sp. nov.

Diagnosis. The new subgenus resembles the genus *Liara* sensu stricto in general shape, basic coloration, and the shape of the long, substraight and laterally compressed female ovipositor that is dorso-ventrally widened

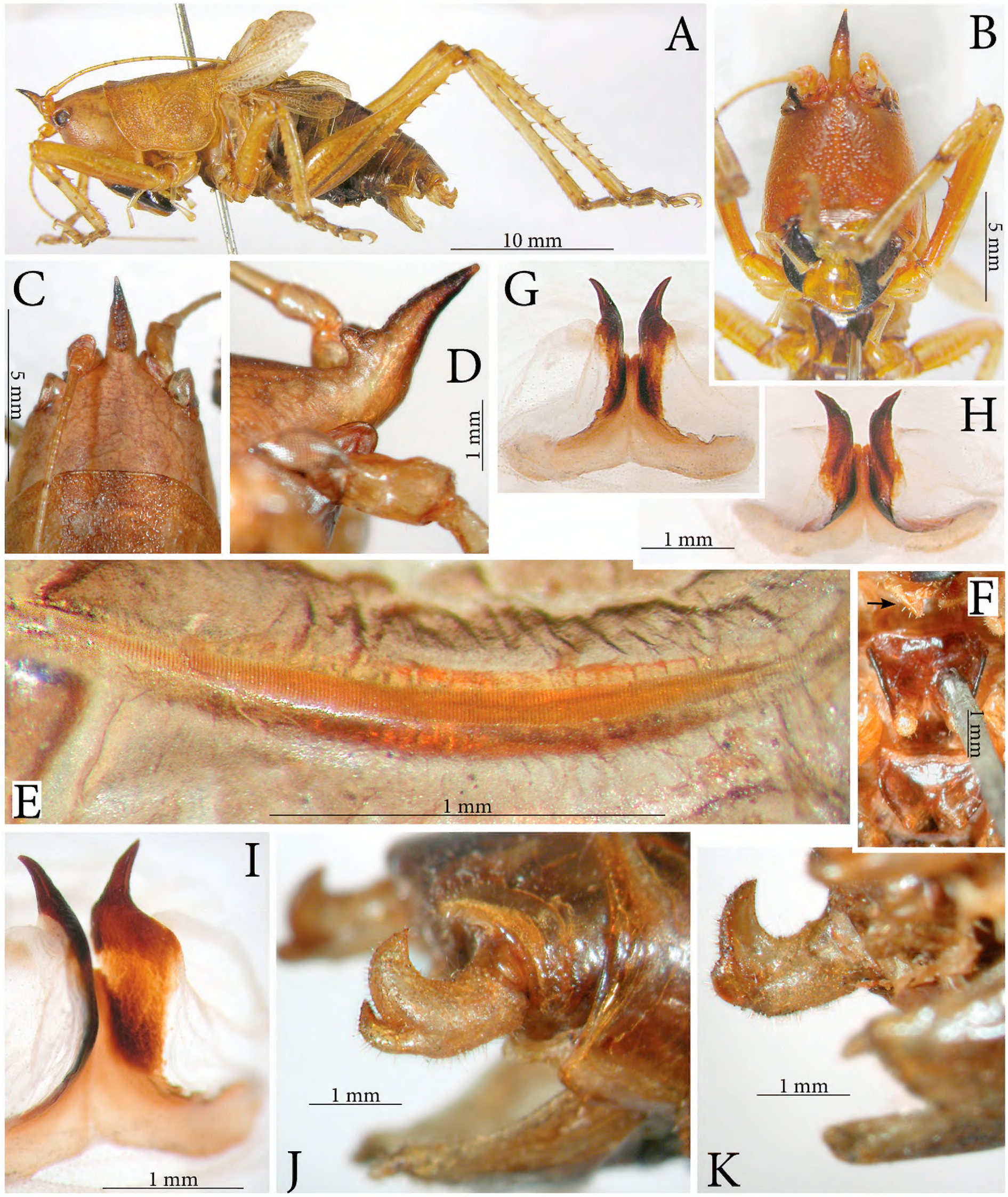

Figure 4. *Liara* (*Acanthocoryphus*) *durata* sp. nov. male holotype: **A** habitus lateral view; **B** face, **C** head dorsal view; **D** fastigium verticis lateral view; **E** stridulatory file on underside of left tegmen; **F** thoracic sternites, the arrow points at one of the prosternal spines; **G–I** titillators of male phallus in ventro-apical view (**G**), do. as seen from base (**H**), do. in oblique lateral view (**I**); **J, K** male cercus in external (**J**) and internal (**K**) views.

in about mid-length. It differs by the strongly modified shape of the male cerci that are shorter and hood-shaped instead of laterally compressed and the ventral branch is rather thin, rounded, and inserted at base of the internal side of the main branch, it is angled about in mid-length and reaching only about the middle of the main branch instead of surpassing it in the nominate subgenus. Moreover, a small spine that is found at tip of the main cercus branch in some species of the nominate subgenus moved to about mid-length of the internal side of the main branch

in the new subgenus and species. The male titillators are simplified in *Indoliara* and consist of long but simple, elongate bases that are bent lateral at tip terminating into a long-narrow oval, granular endplate while in *Liara* s. str. there are often lateral expansions and the tip of the titillators is serrate.

The tip of the fastigium verticis is markedly divided at end into two short lobes; but this might be a species-specific character since a very fine, inconspicuous notch at tip of the fastigium verticis can rarely be also found in species of *Liara* s. str., e.g. in *L. alata* Ingrisch, 1998)

Liara (*Indoliara*) *dividata* sp. nov.

http://zoobank.org/4D3EE6C7-D220-4324-8279-944C54906E4E

Fig. 5

Holotype (male). India: South India, Thekkadi, Periyar Dam (9°35'N, 77°9'E), 6.–10.v.1937, coll. B.M.-C.M. Expedition to South India – depository: BMNH (Lo032S001; B.M.1939–205).

Paratype (1 female). India: South India, Travancore, Pirmed (9°40'N, 76°59'E), elev. 1036 m, 4.–6.v.1933, coll. B.M.-C.M. Expedition to South India – BMNH (Lo032S002; B.M.1939–205).

Etymology. The name of the new species refers to the shape of the fastigium verticis that is divided into two short apical cones; from Latin *dividere* to divide.

Diagnosis. This is the so far only species in the subgenus. Its differences to the species of the other subgenera of *Liara* are discussed above under *Indoliara* subgen. nov.

Description. Fastigium verticis longer than scapus, with a minute tubercle at top; apex bifurcate and slightly S-shaped, separated from fastigium frontis by a shallow furrow, but connected in middle by a lamella (Fig. 5I). Frons rugose (Fig. 5B). Pronotum rugose, funnel-shaped; anterior margin broadly rounded but slightly concave in middle; posterior margin truncate or nearly so; first and second transverse sulci interrupted on disc; shoulders little marked; paranota with anterior and posterior angles rounded; ventral margin very little sinuate, almost straight; tympanal swelling weak but well delimitated; humeral sinus distinct. Prosternum mute; meso- and metasternal lobes conical, short; intermedial plate with small spines at posterior angles (Fig. 5J). Tegmen covering abdomen, regularly narrowing from basal widening to rounded tip (Fig. 5A, H). Femora with the following number of spines on ventral margins: profemur no external, 5–8 internal; mesofemur 6–9 external, no internal; postfemur 10–11 external, no internal; all with irregularly alternating large and minute spines. Knee lobes of profemur obtuse on external, triangular on internal side; of mesofemur obtuse or triangular on external, spinose on internal side; of postfemur spinose on both sides.

Male. Tenth abdominal tergite with short triangular projections above bases of styli; apical margin broadly concave in between. Epiproct wide with rounded lateral lobes [apex hidden]. Paraprocts with compressed, conical projections. Cerci conical, compressed, apex rounded; dorso-external surface concave; ventro-internal surface convex in apical half, with a broad, oblique, transverse furrow in basal half; with an acute spinule behind furrow and a thin process at very base; process conical at base, rectangularly bent dorsad in about middle, strongly compressed thereafter, apex with acute tooth on proximal side (Fig. 5D). Subgenital plate with lateral areas strongly curved dorsad; lateral margins almost straight, approaching each other posteriorly; apex broadly truncate with strong and dense hairs, hairs also on dorsal (= internal) surface in middle of apical area. Styli long, longer than half the length of the subgenital plate, unsymmetrical (Fig. 5G). Titillators separate; rather thin; bases widened and flat, gradually narrowing and approaching to just before apical area; apical area stretched, ovoid, curved laterad, with granular surface (Fig. 5E, F).

Female. Tenth abdominal tergite with apical margin concave in middle. Epiproct triangular, with shallow dorsal groove. Cerci conical, apex slightly curved mediad. Subgenital plate wider than long, roughly triangular with apex roundly excised. Ovipositor compressed blade-shaped, highest in middle.

Coloration. Uniformly light brown (ochre). Frons reddish brown in male; labrum yellow, mandibles black. Tegmen speckled with small brown spots (Fig. 5A, H). Variation: Frons concolorous. Hind area of vertex and anterior area of pronotum with faint brown medial band split by narrow light line. Spines on hind femur and tibia contrasting black.

Measurements. Body w/wings: male 36, female 42; body w/o wings: male 36, female 44; pronotum: male 7.5, female 9.5; tegmen: male 25, female 26.5; hind femur: male 16, female 19.5; ovipositor: female 28 mm long, greatest height 3.2 mm.

Pseudosubria Karny, 1926

Karny, 1926: 147; type species: *Pseudosubria decipiens* Karny, 1926

Pseudosubria assamensis sp. nov.

http://zoobank.org/61582288-A0A6-45DB-990A-79E54E7ED294

Fig. 6

Holotype (male). India: Assam, Imphal (24°51'N, 93°54'E), 22.iii.1946, coll. T.J. Lawrence – depository: BMNH (Lo037S001, B.M.1946–228).

Paratype (1 female). India: Assam, Imphal, 15.iii.1946, coll. T.J. Lawrence – depository: BMNH (Lo037S002, B.M.1946–228).

Etymology. The name of the new species refers to the type locality.

Diagnosis. The shape of the male cerci is similar to that in *P. bispinosa obtusa* Ingrisch, 1998 but has the ventral branch very narrow, regularly upcurved

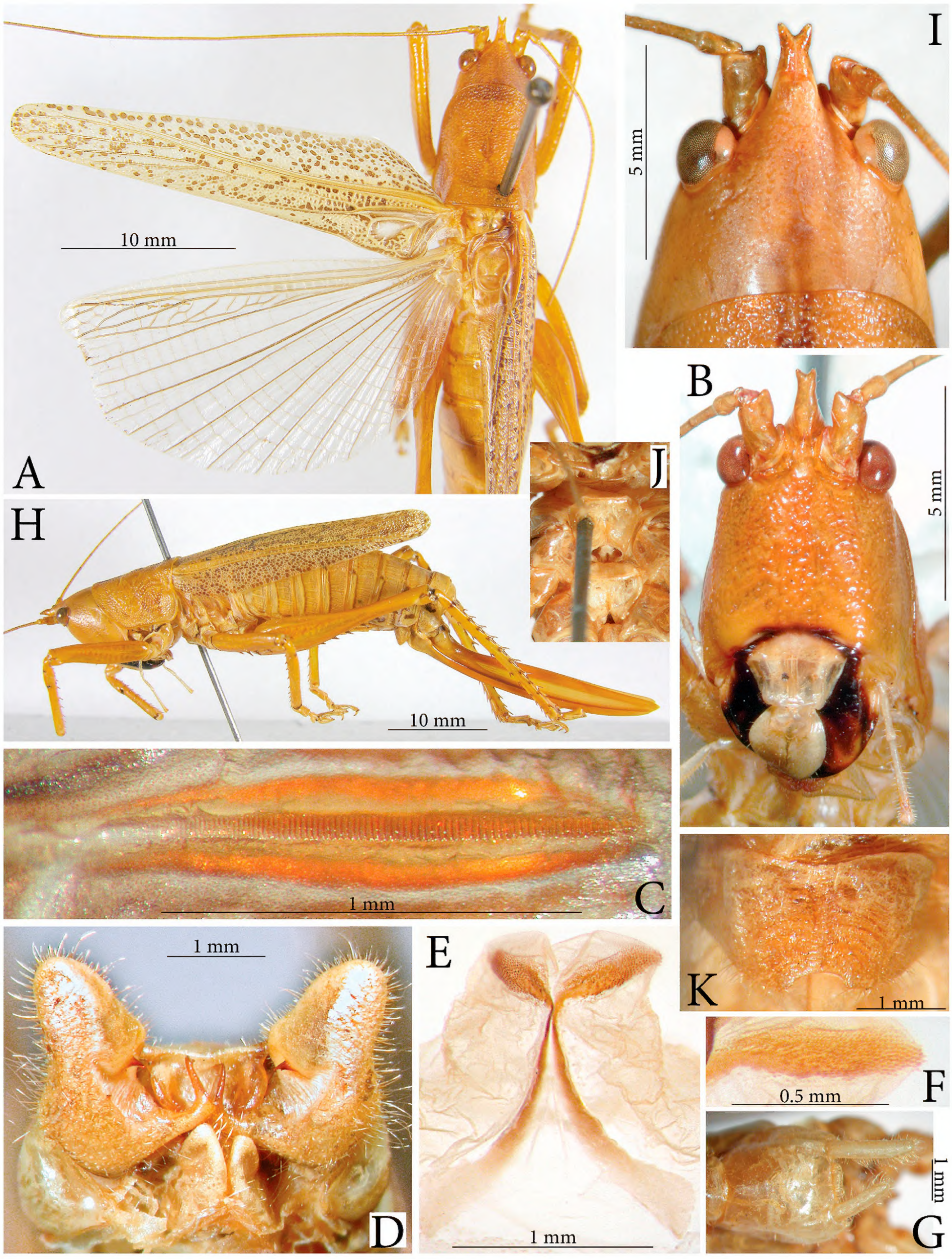

Figure 5. *Liara* (*Indoliara*) *dividata* sp. nov. **A–G** male holotype: **A** habitus dorsal view; **B** face; **C** stridulatory file; **D** abdominal apex with cerci in ventro-apical view; **E** titillators of male phallus; **F** tip of titillators; **G** subgenital plate. – **H–K** female: **H** habitus lateral view; **I** head in dorsal view; **J** thoracic sternites; **K** subgenital plate.

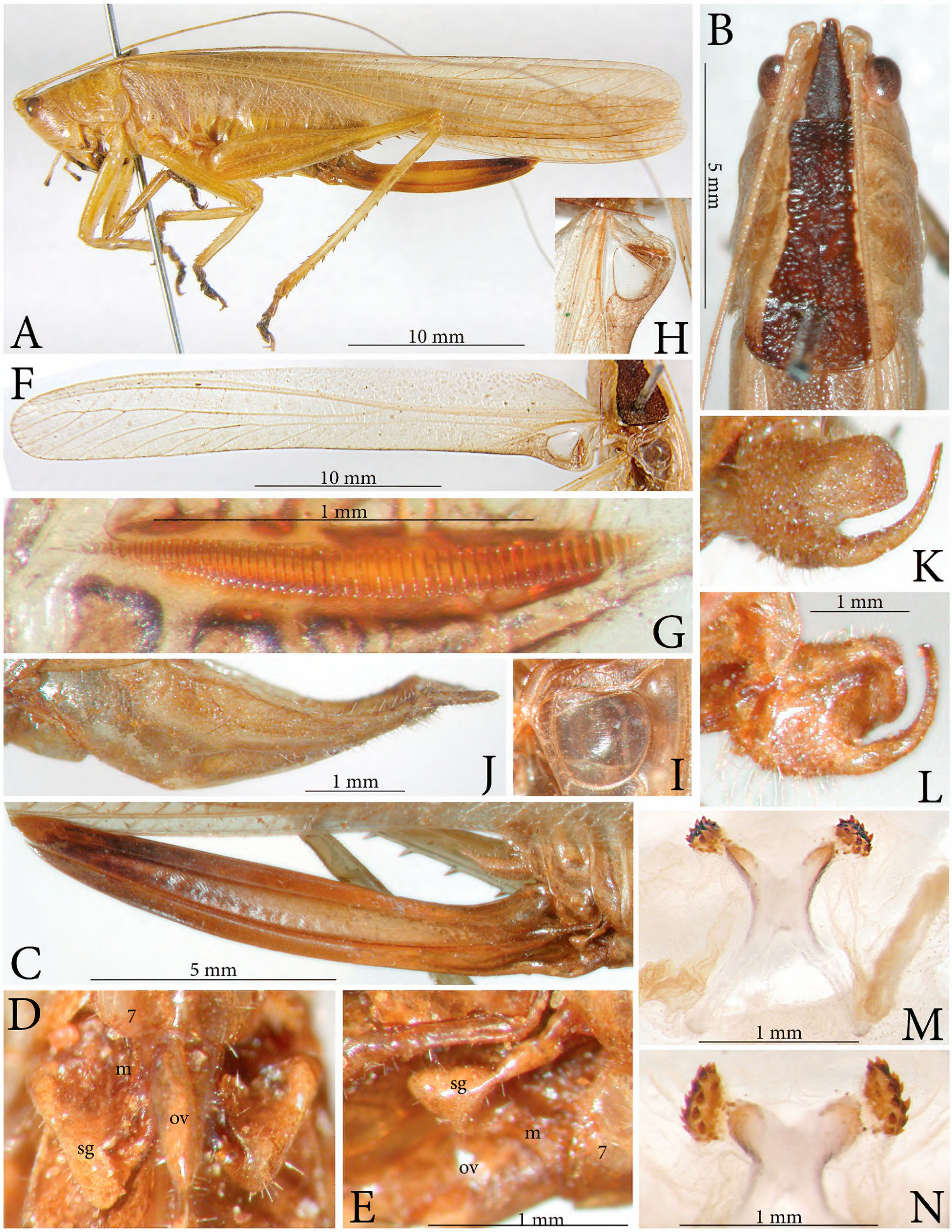

Figure 6. *Pseudosubria assamensis* sp. nov. **A–E** female: **A** habitus lateral view; **B** head and pronotum; **C** ovipositor; **D, E** subgenital plate in ventral (**D**) and lateral view (**E**). – **F–N** male holotype: **F** left tegmen; **G** stridulatory file; **H** base of left tegmen; **I** mirror of right tegmen; **J** subgenital plate in lateral view; **K, L** cercus in external (**K**) and internal (**L**) view; **M, N** phallus with titillators. Abbeviations: 7 seventh sternite, m membrane, ov base of ovipositor, sg lateral lobes of subgenital plate.

throughout instead of substraight behind the basal bent and reaches the top of the cercus stem (Fig. 6K–L). The titillators have a rather long fused central area, also as in *P. b. obtusa*, but the free arms are narrower than in the latter species (Fig. 6M). The female differs from that of the other species by the shape of the ovipositor that is only little dorso-ventrally widened around mid-length and by the shape of the subgenital plate that is split to the base allowing the base of the ovipositor to project between the lateral lobes (Fig. 6D).

Description. A rather small, slender species. Fastigium verticis conical, obtuse, with a dorsal furrow: separated by a concavity and a narrow seam from fastigium frontis. Frons shining with impressed dots, nearly subrugose. Tegmen reaching or little surpassing apex of stretched hind tibiae. Femora with the following number of spines on ventral margins: profemur 1–3 external, 2–3 internal; mesofemur 3–4 external, no internal; postfemur 5–7 external, no internal. Knee lobes of fore femur obtuse on both sides, on mid femur obtuse on external, acute on internal side, of hind femur obtuse on external, short spinose on internal side.

Male. Tenth abdominal tergite prolonged; apical margin in lateral areas nearly straight but converging from both sides; in middle obtuse-angularly excised; with a weak medial carina. Epiproct triangularly rounded with deep medial furrow. Paraprocts with a faint swelling on internal side. Cerci short; external surface convex, at dorso-internal margin with a small triangular expansion; at apex with a large triangular internal expansion covering apex of internal side as a cap; in apical third at ventro-medial margin with a long curved stylate projection curved dorsad behind apex of cercus and narrowing towards apex; internal surface flattened, with a weak fold. Subgenital plate long and narrow; with a medial carina fading towards apex; apical margin slightly concave; styli thin. Titillators X-shaped, fused in middle with basal branches longer than apical branches, for the greatest part hyaline; apex of apical branches darkened, separated by a narrow membranous zone from a dentate apical cap.

Female. Epiproct triangular with medial furrow. Cerci conical with a long styliform apex. Subgenital plate split to base into two conical, cap-like, lateral lobes with obtuse tip that in situ lie in wide emarginations of the base of the ventral ovipositor valves.

Coloration. Ochre. Head and pronotum with a dark brown medial band.

Measurements. Body w/wings: male 37.5, female 37.5; body w/o wings: male 21, female 19.5; pronotum: male 5.8, female 5.6; tegmen: male 31.3, female 31; hind femur: male 12.5, female 12.5; antenna: female 50; ovipositor: female 12 mm.

Depressacca Ingrisch, 1998

Ingrisch, 1998: 108; type species: *Depressacca globosa* Ingrisch, 1998

Depressacca kinabalu sp. nov.

http://zoobank.org/97DC4390-2AC3-49A8-A693-E942FA9AA6B5

Fig. 7A–J

Holotype (male). East Malaysia: Sabah, Mt. Kinabalu, Mesilau (6°10'N, 116°39'E), at light, 4.ii.1964, coll. J. Smart, Royal Soc. Exped. – depository: BMNH (Lo033S001; B.M.1964–250). The type is unique.

Etymology. The name of the new species refers to the type locality; noun in apposition.

Diagnosis. So far only one *Depressacca* species has been known. The new species differs from *D. globosa* Ingrisch, 1998 by the male tenth abdominal tergite that does not have projections but a slightly concave apex, by the male subgenital plate that does not have a medial process and that has only minute styli, by different shapes of the titillators, by the cerci that have the internal tooth inserted subapical, not apical, and by the fastigium verticis that is provided with a distinct tubercle at base.

Description. Fastigium verticis upcurved, with a tubercle at base; apex obtuse; separated by a shallow furrow from fastigium frontis (Fig. 7B). Eyes projecting laterad (Fig. 7A). Frons little rugose (Fig. 7D). Pronotum strongly rugose, depressed, wide; anterior margin truncate in middle; posterior margin little concave; transverse furrows indistinct, widely interrupted in middle; paranota at anterior margin with a spine; ventro-posterior margin sinuate, finely crenulated; auditory swelling greatly swollen but indistinctly outlined; humeral sinus weakly indicated (Fig. 7A, C). Prosternum mute; meso- and metasternum much wider than long, without lobes. Tegmen little surpassing hind knees, nearly covering abdomen; narrowing from base to rounded apex (Fig. 7E). Femora rugose, rather short; spines on anterior side distinctly longer than on posterior side. Fore tibia with spines on ventro-internal side much longer than on external side; spines of hind tibia on dorso-internal side more than twice as long as on the other three margins. Femora with the following number of spines on ventral margins: profemur 3 small external, 4 large internal; mesofemur 5 large external, 2 small internal; postfemur 6–7 mostly large external, no internal. Knee lobes of fore femur obtuse on both sides; of mid femur obtuse on external, acute on internal side; of hind femur spinose on both sides.

Male. Tegmen with stridulatory area strongly projecting (Fig. 7E). Stridulatory file about 1.80 mm long along diameter, with about 210 very dense teeth, plus at end 4 spaced, wider teeth that extend the file length to 1.86 mm along diameter; in middle of file with about 111 teeth at 1 mm or 55.5 teeth per 0.5 mm (Fig. 7F). Tenth abdominal tergite little projecting between insertion of cerci; apical margin broadly concave. Epiproct Y-shaped; lateral margins projecting as rounded lobes, except in apical area (Fig. 7G, I). Paraprocts with a small, compressed, obtuse projection (Fig. 7I). Cerci short, conical; at apex with a

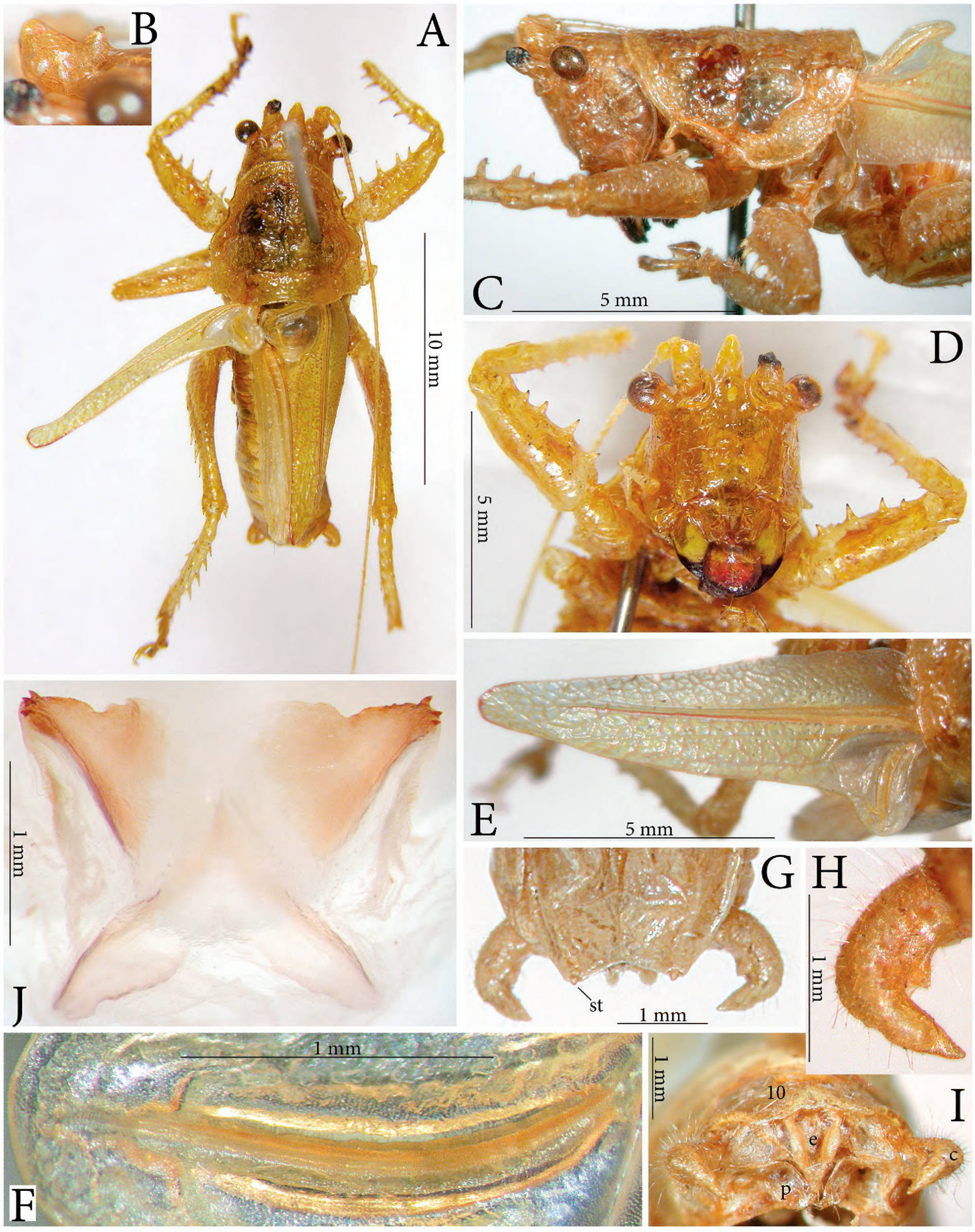

Figure 7. *Depressacca kinabalu* sp. nov. male holotype: **A** habitus dorsal view; **B** fastigium verticis lateral; **C** head, pronotum and base of tegmen lateral; **D** face; **E** left tegmen; **F** stridulatory file; **G** subgenital plate and cerci in ventral view; **H** left cercus in dorsal view; **I** tip of abdomen in apical view; **J** titillators of phallus. Abbreviations: 10 tenth abdominal tergite, c cercus, e epiproct, p paraproct, st stylus.

stout, subacute, internal projection; basal of projection on internal side with another, small, triangular projection (Fig. 7H). Subgenital plate broad, with indication of a faint medial carina; apex broad obtuse-angularly excised. Styli reduced to small tubercles (Fig. 7G). Titillators subfused in middle; basal lobes, central area and base of apical lobes hyaline; apical lobes afterwards light brown, of roughly triangular outline and with wavy surface; margin crenulate, slightly bilobate with margin of external lobe provided with three acute teeth (Fig. 7J).

Coloration. Discolored light yellowish brown; might have been green when alive.

Measurements of male. Body: 17; pronotum: 5.7; tegmen: 10.2; hind femur: 7.8 mm.

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